

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-14. (Cancelled).

15. (New) A high voltage pulse generating circuit comprising:

a DC voltage source having first and second output terminals;

a first semiconductor switch having a low withstand voltage with turn-on and turn-off faculty and having one end connected to said first output terminal of said DC voltage source;

a branch circuit including a free-wheel diode connected across the other end of said first semiconductor switch and said second output terminal of the DC voltage source; and

a series circuit connected in parallel with said branch circuit and including an inductance and a second semiconductor switch with turn-on and turn-off faculty, said second semiconductor switch being constructed by a series circuit of a plurality of semiconductor switching elements having a high withstand voltage, the number of which is determined in accordance with an amplitude of an output voltage pulse to be generated, said circuit further comprises a plurality of iron cores, the number of which is equal to that of said plurality of semiconductor switching elements, a primary winding passing through said plurality of iron cores and being connected in series with said free-wheel diode and a plurality of secondary windings each passing through respective iron cores and being connected to gates and cathode terminals of respective semiconductor switching elements of said series circuit of semiconductor switching elements;

wherein after turning said first and second switches on to store inductive energy in said inductance, the energy stored in the inductance is commutated to a load connected across said second semiconductor switch by turning said first and second semiconductor switches off.

16. (New) The high voltage pulse generating circuit according to claim 15, wherein each semiconductor switching element of said series circuit of a plurality of semiconductor switching elements constituting said second semiconductor switch is formed by a static induction thyristor.

17. (New) The high voltage pulse generating circuit according to claim 16, wherein said primary winding and secondary windings are wound on the iron cores by one turn.

18. (New) The high voltage pulse generating circuit according to claim 16, wherein said first semiconductor switch having a low withstand voltage is formed by a power MOSFET.

19. (New) A high voltage pulse generating circuit comprising:
a DC voltage source having first and second output terminals;
a first switch having one end connected to said first output terminal of said DC voltage source;

a branch circuit including a free-wheel diode connected across the other end of said first switch and said second output terminal of the DC voltage source; and

a series circuit including an inductance and a second switch and being connected in parallel with said branch circuit;

wherein after turning said first and second switches on to store inductive energy in said inductance, the energy stored in the inductance is commutated to a load connected across said second switch by turning said first and second switches off; and wherein said second switch is turned on again after turning off the second switch to discharge energy remaining in said circuit.

20. (New) The high voltage pulse generating circuit according to claim 19, wherein said second switch is turned on again for a short time period after turning off the second switch to discharge energy remaining in said circuit.

21. (New) The high voltage pulse generating circuit according to claim 15, wherein said first and second semiconductor switches are turned off substantially simultaneously.

22. (New) The high voltage pulse generating circuit according to claim 15, wherein said second semiconductor switch is turned off immediately after said first semiconductor switch is turned off.

23. (New) The high voltage pulse generating circuit according to claim 15, wherein a parallel circuit of a capacitor and a resistor is connected in parallel with said free-wheel diode.

24. (New) The high voltage pulse generating circuit according to claim 15, wherein a resistor is connected in parallel with said free-wheel diode.

25. (New) The high voltage pulse generating circuit according to claim 15, wherein said load is a discharge gap provided in a plasma generating reactor.